# Interferometric Measurement on a Nanometric Length Scale

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We investigate a measurement technique based on High Resolution Interference Microscopy (HRIM). HRIM allows the characterization of amplitude and phase of electromagnetic wave-fields in the far-field with a spatial accuracy that corresponds to a few nanometers in the object plane. The experimental tool working in transmission with a resolution of *20 nm* in the object plane was presented in our previous work [1]. The accurate measurement of the optical characteristics below the classical resolution limit will be discussed.

The experimental setup of HRIM is employing the Mach-Zehnder interferometer as shown in **Fig. 1**. HeNe laser ($\lambda$ = *632.8 nm*) is used as a light source and the interferometric microscope consists of a reference arm and a signal arm. Two telescopic magnification stages lead to the resolution limit measurement.

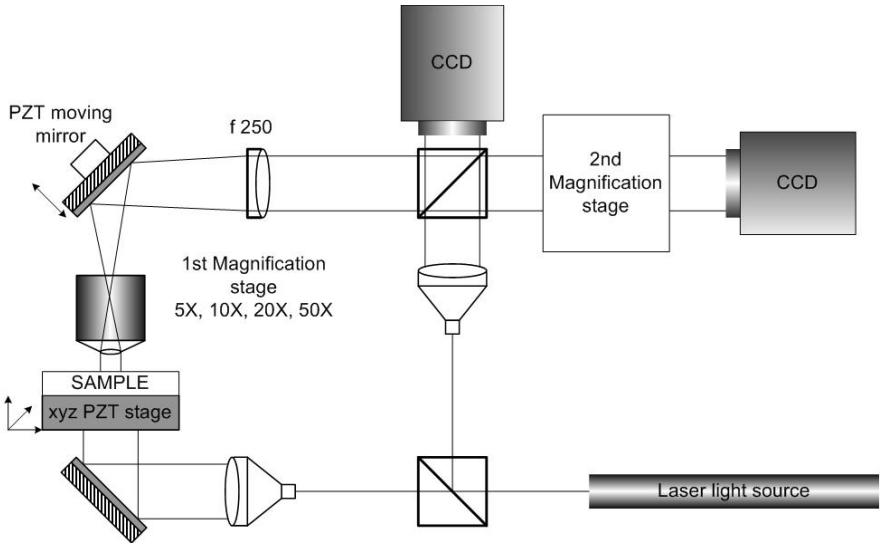


**Fig. 1**: Experimental scheme of the High Resolution Interference Microscope.

## Reference

[1] Rockstuhl, C.; Märki, I.; Scharf, T.; Salt, M.; Herzig, H. P.; Dändiker, R. Current Nanoscience, 2006, 2, 337-350.